

CLAIMS

We claim:

1. A non-naturally occurring non-halophyte oil crop plant comprising seeds with normal or near normal fatty acid distribution when cultivated in high salt.
2. The non-naturally occurring non-halophyte oil crop plant of claim 1 wherein the near normal fatty acid distribution is within five percent of the normal distribution.
3. The non-naturally occurring non-halophyte oil crop plant of claim 1 wherein the high salt is at least two times the optimal osmolality for the non-halophyte plant.
4. The non-naturally occurring non-halophyte oil crop plant of claim 1 wherein the high salt is at least three times the optimal osmolality for the non-halophyte plant.
5. The non-naturally occurring non-halophyte oil crop plant of claim 1 wherein the high salt is at least four times the optimal osmolality for the non-halophyte plant.
6. The non-naturally occurring non-halophyte oil crop plant of claim 1 wherein the high salt is at least five times the optimal osmolality for the non-halophyte plant.
7. The non-naturally occurring non-halophyte oil crop plant of claim 1 wherein the high salt is at least ten times the optimal osmolality for the non-halophyte plant.
8. The non-naturally occurring non-halophyte oil crop plant of claim 1 wherein the high salt is at least twenty times the optimal osmolality for the non-halophyte plant.
9. The non-naturally occurring non-halophyte oil crop plant of claim 1 wherein the plant is selected from the group consisting of canola, safflower, palm, coconut, cotton, flax, olive, jojoba, peanut, castor, sesame, sunflower and soybean.
10. The non-naturally occurring non-halophyte oil crop plant of claim 1 wherein the plant is canola.

11. The non-naturally occurring non-halophyte oil crop plant of claim 1 wherein the plant is safflower.

12. The non-naturally occurring non-halophyte oil crop plant of claim 1 wherein the plant comprises a transgene.

13. The non-naturally occurring non-halophyte oil crop plant of claim 12 wherein the transgene induces vacuolar accumulation of salt.

14. The non-naturally occurring non-halophyte oil crop plant of claim 12 wherein the transgene induces secretion of salt out of the cytoplasm.

15. The non-naturally occurring non-halophyte oil crop plant of claim 12 wherein the transgene induces exclusion of salt from the cytoplasm.

16. The non-naturally occurring non-halophyte oil crop plant of claim 13 wherein the transgene comprises a first nucleic acid encoding a vacuolar Na⁺/H⁺ transporter.

17. The non-naturally occurring non-halophyte oil crop plant of claim 16 wherein the first nucleic acid is selected from the group consisting of the following:

(a) a nucleic acid molecule of the coding strand shown in SEQ ID NO:1, or a complement thereof;

(b) a nucleic acid molecule encoding the same amino acid sequence as encoded by the nucleotide sequence of (a);

(c) a nucleic acid molecule that hybridizes to the sequence set forth in SEQ ID NO:1 or the complement of the sequence set forth in SEQ ID NO:1 under highly stringent conditions that include at least one wash in 0.1xSSC, 0.1% SDS, at 65° C for thirty minutes; and

(d) a nucleic acid molecule encoding a plant NHX transporter polypeptide that hybridizes to the sequence set forth in SEQ ID NO:1 or the complement of the sequence set forth in SEQ ID NO:1 under moderately stringent conditions that includes at least one wash in 0.1xSSC, 0.1% SDS, at 50° C for thirty minutes.

18. The non-naturally occurring non-halophyte oil crop plant of claim 17 wherein the transgene further comprises a second nucleic acid operably linked to the first nucleic acid, where in the second nucleic acid comprises a plant promoter.

19. The non-naturally occurring non-halophyte oil crop plant of claim 18 wherein the promoter is the CaMV promoter.

20. The non-naturally occurring non-halophyte oil crop plant of claim 19 wherein the plant is canola.

21. A transgenic non-halophyte seed produced from the plant of claim 1.